TIM MILLER ASSOCIATES, INC.

10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

May 21, 2003

Mr. James Petro, Chairman
Town of New Windsor Planning Board
Town Hall, 555 Union Avenue
New Windsor, New York 12553

Re: Meadowbrook Estates Subdivision, Response to Traffic Comments

Dear Mr. Petro:

This letter responds to the April 2, 2003 comments from John Collins Engineers, P.C. and by the May 15, 2003 comments from the New York State Department of Transportation. These letters are contained in Attachment A.

Comments on the April 2, 2003 letter have been numbered from 1 to 16 in Attachment A and are addressed below:

Response 1: The traffic study was forwarded to the New York State Department of Transportation (NYS DOT). Attachment A contains the May 15, 2003 NYS DOT comments.

Response 2: Comment noted regarding the reduction in number of proposed units.

Response 3: Mr. Akhtar Shareef (NYS DOT) confirmed in a phone call in early April that he had received EAF Appendix F. This material was available for his May review letter contained in Attachment A.

Response 4: Comment noted. This agrees with the NYS DOT first comment.

Response 5: The growth of the existing traffic volumes to a 2005 design year appears appropriate given the reduction in the units. As part of a Sensitivity analysis a 2008 design year was examined and is included in Attachment B.

Response 6: The traffic to and from the Hannaford Supermarket will alter trip distribution at Five Corners. Residents shop for food daily and weekly. As residents in the NYS Route 94 corridor generally already travel on NYS Route 94 to reach shopping opportunities in the Five Corners areas, many of these Hannaford trips are already on the network. Those trips are diverted trips or passby trips already on the NYS Route 94 corridor west of Five Corners.

A sensitivity analysis was prepared that includes traffic from the Hannaford site as though they were new trips. These trips have been included in a revised no-build volumes in Attachment C as part of the sensitivity analysis described in Attachment B.

Responses 7, 8 and 9

Peak hour congestion in the Five Corners area traffic is anticipated to continue to encourage use of the shorter and quicker routing to the Thruway interchange area via Bethlehem Road. This area contains Stewart Airport, NYS Route 300 interchanges with I-87 and I-84, the Newburgh Mall, Walmart, Home Depot and other shopping/employment destinations. To clarify the issue of road construction timing and to further examine the distribution a sensitivity analysis was completed as shown in Attachment B. This sensitivity analysis assumes that 100 percent of the site generated traffic uses the NYS Route 94 access. The alternative routing to/from Bethlehem Road the north would be via NYS Route 94 and the Five Corners intersection.

Response 10: The potential of Reserve traffic using the site will be reduced in many ways. The internal site layout does not promote such a routing. The construction of Independence Drive provides improved access to the west. The construction of a traffic signal at Mt. Airy Road this fall would permit easier and safer turns on NYS Route 94. The closing of the Old Route 94 western access to NYS Route 94 would make travel more circuitous. Regardless of these changes a sensitivity analysis was completed as shown in Attachment B. This Sensitivity analysis assumes the Reserve traffic through the site is balanced by site traffic through the Reserve.

Response 11: The final configuration of the Old Route 94 (east) intersection with NYS Route 94 and the closing of Old Route 94 western portion would be reviewed by the NYS DOT as part of the State Highway Work Permit application process. The applicant discussed the concept of narrowing the Old Route 94 east access to NYS Route 94 and closing the Old Route 94 west access with the NYS DOT, as this will require a highway work permit from the NYS DOT.

Response 12: The traffic signal is part of the traffic improvements for the High School.

Response 13: A Sensitivity analysis in Attachment B examined a later build year, more no-build projects, and change in site distribution. These changes did not alter the left turn volumes into the site from NYS Route 94. As discussed in the February 2003 report, the five vehicles in the AM peak hour and fifteen in the PM peak hour are below guidelines for a left turn lane. Furthermore the traffic signal at NYS Route 94/ Mt. Airy Road should contribute to lower speeds and periodic gaps in westbound NYS Route 94 traffic.

Response 14: The intersection of NYS Route 94 and Jackson Avenue should be monitored in the future with respect to the potential to meet signal warrants. The intersection was reevaluated as part of the sensitivity analysis in Attachment B. The additional no-build traffic, if it occurs as assumed, would increase delays in the existing and No build conditions. However the sensitivity analysis does not add

additional site traffic to this intersection. Thus, this intersection was examined only with the signal improvement verifying the improvement was still valid (level of service C or better) in the Build condition with additional traffic from other projects.

Response 15: Trips refer to Jackson Avenue/NYS Route 94 intersection.

Response 16: The corrected figure is shown in Attachment E. This figure change does not alter the level of service calculations provided in the EAF.

The following are responses to the four comments from the New York State Department of Transportation.

1) Comments concerning the acceptability of methodology are noted.

2) Mr. Steve Poisman of NYS DOT Design Group was contacted in October of 2002. Mr. Martin Evans has been contacted also.

3) The Traffic Engineering and Safety Group has been contacted early in SEQRA process and will be continue to be involved in the work permitting process.

4) Following the SEQRA determination, final site plans would be developed and sent to the Department's local residency office as part of the Highway permit process.

I trust that the above is responsive to the comments received on this matter.

Sincerely,

James A. Garofalo, AICP
Director of Transportation
TIM MILLER ASSOCIATES, INC.

C: P. Grealey, PE, John Collins Engineers
Aktar Shareef, NYS DOT
Mark Edsall, PE
David Weinberg, Land Master
Neil Novesky, Town of Cornwall Planning Board Chairman

Attachment A

TRAFFIC AND TRANSPORTATION
COMMENT LETTERS

JOHN COLLINS
ENGINEERS, P.C. TRAFFIC • TRANSPORTATION ENGINEERS
11 BRADHURST AVENUE • HAWTHORNE, N.Y. • 10532 • (914) 347-7500 • FAX (914) 347-7266

MEMORANDUM

DRAFT

TO: Mark Edsall, P.E.
FROM: Philip J. Grealy, Ph.D., P.E.
DATE: April 2, 2003
RE: Meadowbrook Estates
Town of New Windsor/Town of Cornwall, New York
PROJECT: No. 676

****

The following is our initial technical review of the Traffic Impact Study contained in the EAF dated December 20, 2002 for the above referenced development prepared by Tim Miller Associates, Inc.

1 o As we understand, the Traffic Study has been forwarded to NYSDOT for their review. Comments from the NYSDOT should be obtained.

2 o It appears that the Project has been reduced from some 181 single family homes to some 90 single family homes which is addressed in the Traffic Study.

3 o The EAF addressed the "Five Corners" intersection in Appendix "F". This Appendix was missing from our document and had subsequently been forwarded to our office. It should be confirmed that Appendix "F" was forwarded to the NYSDOT.

4 o The Existing Traffic Volumes appear reasonable.

5 o The Existing traffic volumes were grown by an appropriate background growth rate of 2% per year to a 2005 Design Year. Would a Design Year of 2007/2008 be more appropriate?

6 o Traffic for other proposed developments in the area was included as part of the No-Build Condition including traffic for The Reserve. However traffic for the recently approved Hannaford Supermarket was not included. A sensitivity analysis to include traffic for the Hannaford Supermarket should be provided. This may be significant for the Route 94 and Meadowbrook Road (East) intersection.

7 o Access to the project is proposed to Meadowbrook Road (via Route 94) and through The Reserve. It appears by the site distribution figure (Figure 8) that 45% of the traffic will arrive and depart through The Reserve with 25% via Mt Airy Road and 20% via a new roadway (Independence Drive). Noting the above, the following should be considered:

8 • Based on the review of the existing roadway network and existing traffic volumes, the 45% to/from Bethlehem Road appears to be high. Confirmation of the arrival and departure patterns should be provided. Depending on this information, a sensitivity analysis may be necessary assuming more traffic to/from the Meadowbrook Road access (Via Route 94).

9 • Assuming the 45% through The Reserve, the time frame for the completion and opening of the new roadway may be critical, especially since the Design Year for the Meadowbrook Estates project is 2005. Depending on the time frame of The Reserve and the time frame of the new roadway, a sensitivity analysis assuming all site traffic utilizing Meadowbrook Road may be required.

10 o Also, there the potential for some of The Reserve traffic to access Route 94 through Meadowbrook Estates. A sensitivity analysis should be conducted assuming more traffic to/from the Meadowbrook Road access (Via Route 94).

11 o Meadowbrook Road (East) currently intersects Route 94 at an acute angle. The Applicant is proposing to realign the Meadowbrook Road east approach to improve current conditions. Based on the information provided, it appears that acceptable sight distance will be provide at the reconfigured Route 94/Meadowbrook Road (East) intersection with the proposed realignment of this intersection. The final configuration of this intersection will have to be reviewed with the NYSDOT.

12 o Traffic Study indicates that the improvements to the intersection of Route 94 and Mount Airy Road/access to the Cornwall High School are anticipated to be in place prior to the opening of the High School.

13 o The Traffic Study indicates that a separate left turn lane on Route 94 into Meadowbrook Road (East) would not be required. However, in consideration of the above distribution comments and additional traffic growth comments, the left turn lane requirement may have to be re-evaluated.

14 o The Traffic Study indicates that the Route 94/Jackson Road intersection will operate at a Level of Service "F" with and without the proposed development. The Traffic Study also indicated that to improve the operation of this intersection, a traffic signal would be required under future conditions. This intersection should be monitored in the future to determine if traffic signal warrants will be met. In addition, depending on the above distribution comments and additional traffic growth comments, this intersection may have be re-evaluated.

15 o As an editorial comment, on page 15 under heading 5.2 Build Level of Service, the opening sentence of "the proposed Meadowbrook Estates will be contributing 19 trips in the AM Peak and 24 trips in the PM peak" is unclear. Does this refer to the Route 94 and Meadowbrook Road (west) intersection. As noted on Table 8, the Project will generate a total of 73 AM trips and 97 PM trips to the area roadway network.

16 o Figure 10 should show the Site Generated PM Peak Hour Traffic not the Build PM Peak Hour Traffic.

The above comments need to be addressed before we can finalize our review.

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
4 BURNETT BOULEVARD
POUGHKEEPSIE, N.Y. 12603

ROBERT A. DENNISON III, P.E.
REGIONAL DIRECTOR

JOSEPH H. BOARDMAN
COMMISSIONER

May 15, 2003

Mr. James Petro, Chairman
Planning Board
Town of New Windsor
555 Union Avenue
New Windsor, New York 12553-6196

Re: Draft Environmental Impact Statement
Meadowbrook Estates
Town of Cornwall/Town of New Windsor
Orange County

Dear Mr. Petro:

We have completed our review of the traffic and transportation impacts contained in the Draft Environmental Impact Statement for the referenced project and have the following comments to offer:

1) The methodology utilized in the traffic impact study including the existing traffic volumes, trip generation rates, trip distribution rates, 2% growth rate, no-build traffic volumes and resulting build traffic volumes is acceptable.

2) The Department is currently working on improvements to Route 94 (PIN 804110, from Reily Rd. to Rte. 32) within the vicinity of the referenced project. We suggest that Mr. Martin Evans of our Design Group (845-431-5865) should be contacted to incorporate any changes to the Department's plans as part of this project.

3) Elimination of the existing Old Route 94 West/Route 94 intersection, realignment of Old Route 94, safety related issues and the proposed location of realigned access to Route 94 would be reviewed by our Traffic Engineering and Safety Group as part of highway work permit process.

4) We would like to remind you that a State Highway Work Permit will be required for any curb cuts and/or work within the Route 94 right-of-way. An application and final site plans should be forwarded to this Department's local residency office, as soon as possible to initiate the review process.

If you have any questions or need additional information, we can be reached at (845)431-5793.

Very truly yours,

Akhter A. Shareef
Senior Transportation Analyst

Attachment B

SENSITIVITY ANALYSIS

ATTACHMENT B

Sensitivity Analysis Assumed Conditions

The Sensitivity analysis considered the cumulative effect of three changes in the traffic analysis volumes as described below:

1. Additional two percent per year for three years to 2008.
2. Additional No Build traffic from Hannaford Supermarket and Five Corners' area.
3. Increased traffic at the access to NYS Route 94 equivalent to rerouting all site traffic to/from Bethlehem Road toward NYS Route 300 via Five Corners. Reserve traffic going through the site is balanced by site traffic going through the Reserve development.

Traffic volumes for the sensitivity analysis including No Build, site distribution, site generated traffic, Build Condition are shown in Attachment C using the figure numbers corresponding to the EAF figures.

Sensitivity Analysis Results

Table 1 shows the resultant levels of service for the Build condition assuming the above sensitivity changes.

Mount Airy/NYS Route 94 signal timing in the AM peak would need to be adjusted to address additional through traffic to maintain D or better. The PM peak hour remains level of service C or better.

NYS Route 94 Meadowbrook East (old Route 94) southbound level of service declines one service level compared to the Build Condition. The AM peak hour level of service C becomes D and the PM peak hour level of service D goes to E.

NYS Route 94 Meadowbrook West (old Route 94): no change in level of service from the Build Condition.

NYS Route 94/Jackson Avenue intersection had level of service F in No Build without additional traffic. The redistribution of site traffic does not add any site traffic to this intersection. If signalized, mitigation for AM peak hour would remain unchanged at level of service B. The PM peak hour would be level of service C or better. Additional green time for through movement would compensate for additional through traffic.

Bethlehem Road /Mt Airy: This was level of service B or better in the Build Condition. Above analysis assumptions reduce traffic in this location so no further analysis was done.

Orrs Mill Road/Jackson Avenue: no change in level of service between the Build Condition and the Sensitivity Condition.

Level of service calculations are shown in Attachment D.

TABLE 1
Sensitivity Analysis Build Condition Level of Service Summary

Intersection Roads	Lane Group (Approach Direction -Movement)	AM Weekday Peak Hour			PM Weekday Peak Hour		
		Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service	Volume to Capacity Ratio	Delay seconds/ vehicle	Level of Service
Mount Airy Road & NYS Route 94							
NYS Route 94	*EB-L*	*0.04*	*9.9*	*A*	*0.58*	*28.4*	*C**
	EB-TR	*0.96*	*47.1*	*D**	*0.65*	*15.1*	*B*
NYS Route 94	*WB-L*	*0.87*	*51.1*	*D**	*0.26*	*10.9*	*B**
	WB-TR	*0.52*	*18.4*	*B*	*0.89*	*26.2*	*C**
Mt. Airy HS Drive	*NB-LTR*	*0.54*	*29.9*	*C*	*0.71*	*27.4*	*C*
Mt. Airy Road	*SB-LTR*	*0.85*	*54.1*	*D*	*0.74*	*31.7*	*C*
	Total		*40.3*	*D**		*23.5*	*C**
NYS Rt. 94 & Meadowbrook Rd (East)							
NYS Route 94	EB-LTR	0.01	8.2	A	0.02	9.5	A
	WB-LTR	0.00	9.3	A	0.00	8.8	A
Meadowbrook Rd.	NB-LTR	0.02	16.6	C	0.01	21.4	C
	SB-LTR	0.27	26.7	D*	0.30	42.1	E*
NYS Rt. 94 & Meadowbrook Rd (West)							
NYS Route 94	WB-LT	0.00	9.0	A	0.01	8.8	A
Meadowbrook Rd.	NB-LR	0.07	22.2	C	0.03	14.1	B
Orrs Mill Road & Jackson Avenue							
Orrs Mill Road	EB-LTR	0.01	7.7	A	0.02	8.2	A
	WB-LTR	0.00	7.9	A	0.00	7.5	A
Jackson Avenue	NB-LTR	0.10	13.3	B	0.15	14.9	B
	SB-LTR	0.54	21.2	C	0.41	18.9	C
NYS Rt. 94 & Jackson Ave. (w/ signal)							
NYS Route 94	*EB-LTR*	*0.72*	*17.2*	*B*	*0.73*	*14.3*	*B*
	WB-LTR	*0.47*	*11.8*	*B*	*0.76*	*14.7*	*B*
Jackson Avenue	*NB-LTR*	*0.30*	*16.2*	*B*	*0.59*	*26.9*	*C**
	SB-LTR	*0.44*	*18.4*	*B*	*0.50*	*23.5*	*C**
	Overall		*15.8*	*B*		*16.9*	*B*

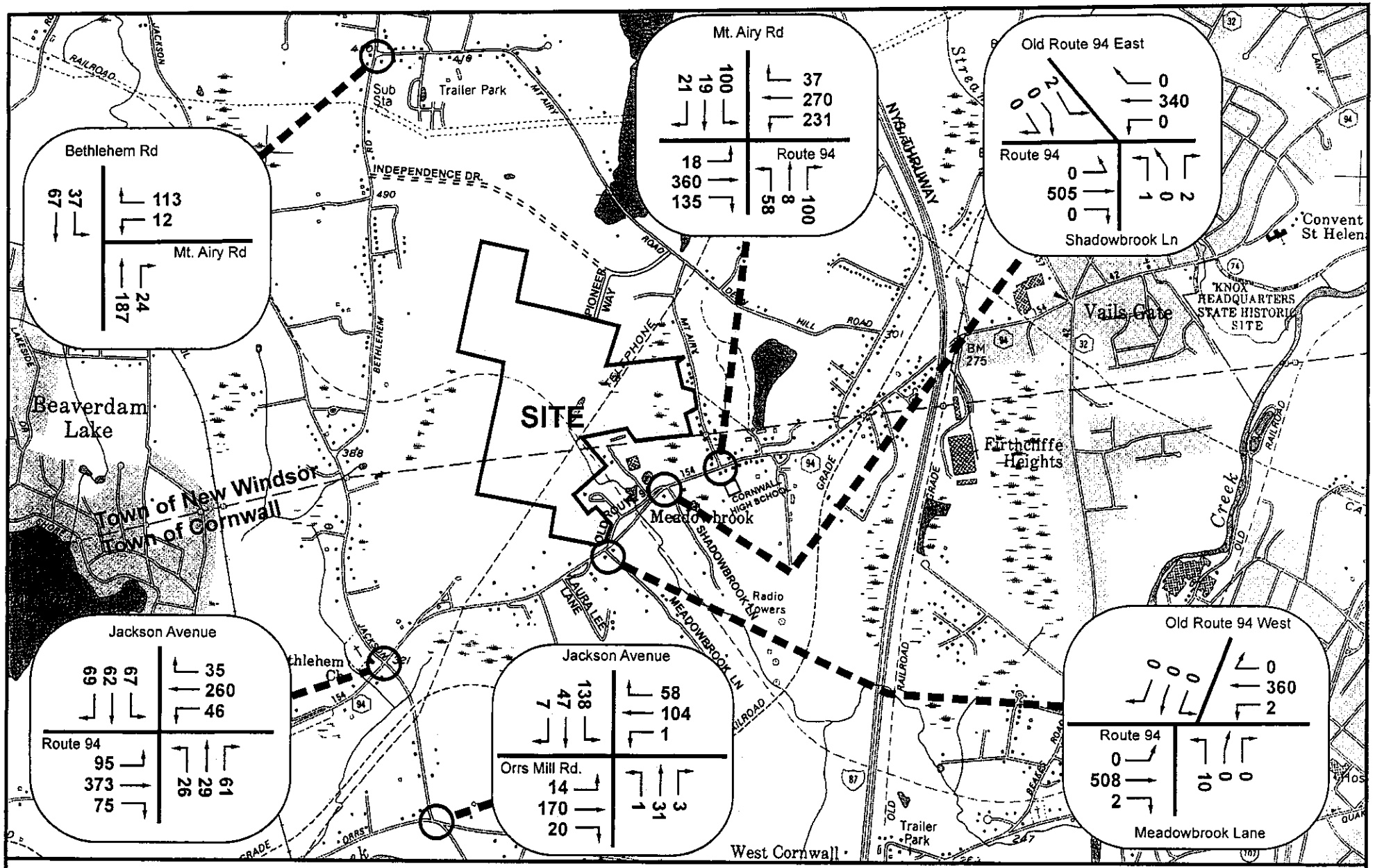
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R = right, T = through, TR = through and right, (e.g. WB-L = Westbound left).

* Indicates a decline in the level of service from Build Condition.

Italics denotes signalized intersection.

Attachment C

SENSITIVITY ANALYSIS TRAFFIC VOLUMES FIGURES



Intersections Studied

Figure 4: Sensitivity No Build AM Peak Hour Traffic

Meadowbrook Estates

Towns of New Windsor and Cornwall, Orange County, New York

Base Map: NYSDOT Cornwall Planimetric Quad Map, 1985

Scale: 1" = 2000'

File 0168 Fig 4 05/20/03

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

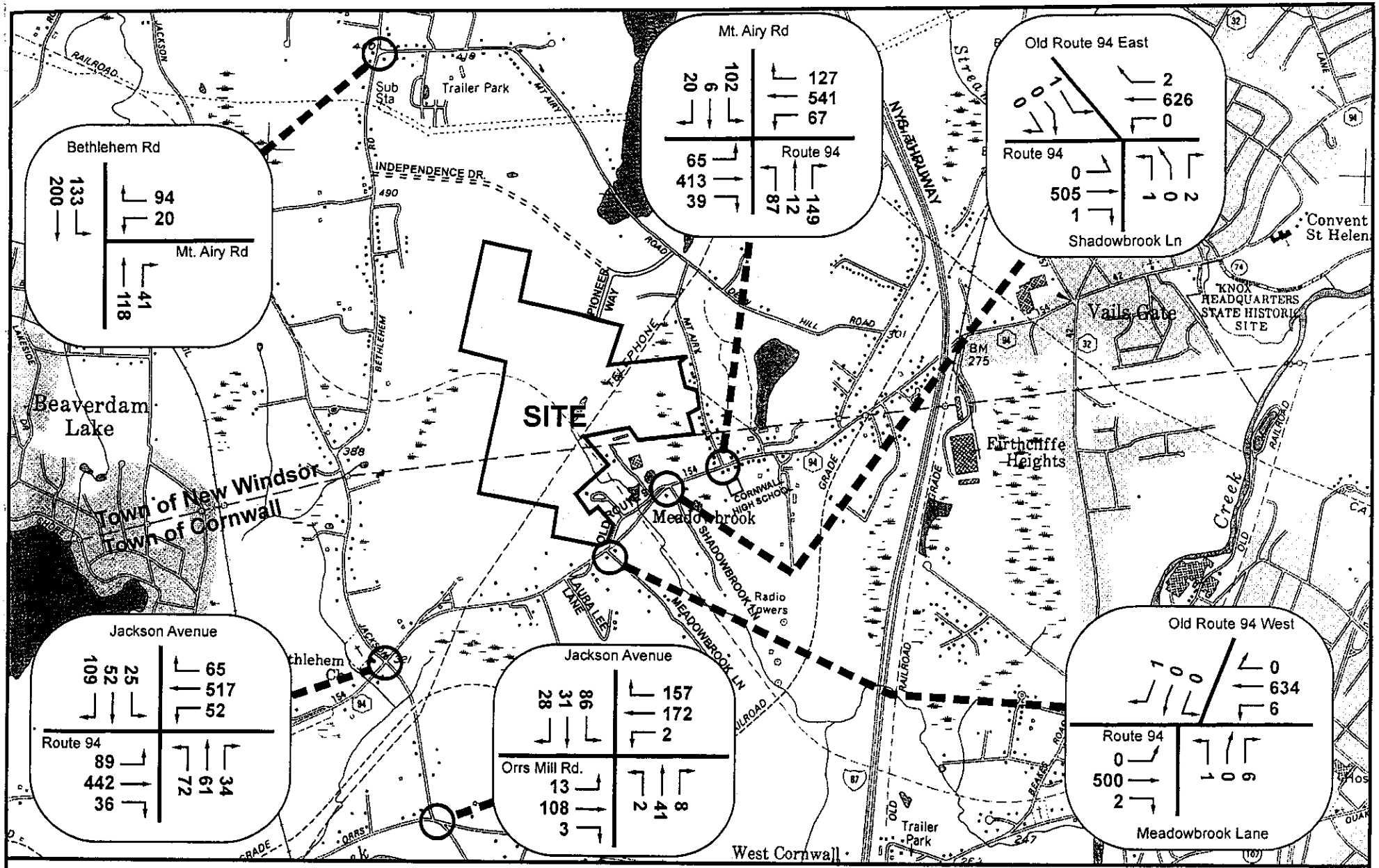


Figure 5: Sensitivity No Build PM Peak Hour Traffic

Meadowbrook Estates

Towns of New Windsor and Cornwall, Orange County, New York

Base Map: NYSDOT Cornwall Planimetric Quad Map, 1985

Scale: 1" = 2000'

File 0168 Fig 5 05/20/03

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

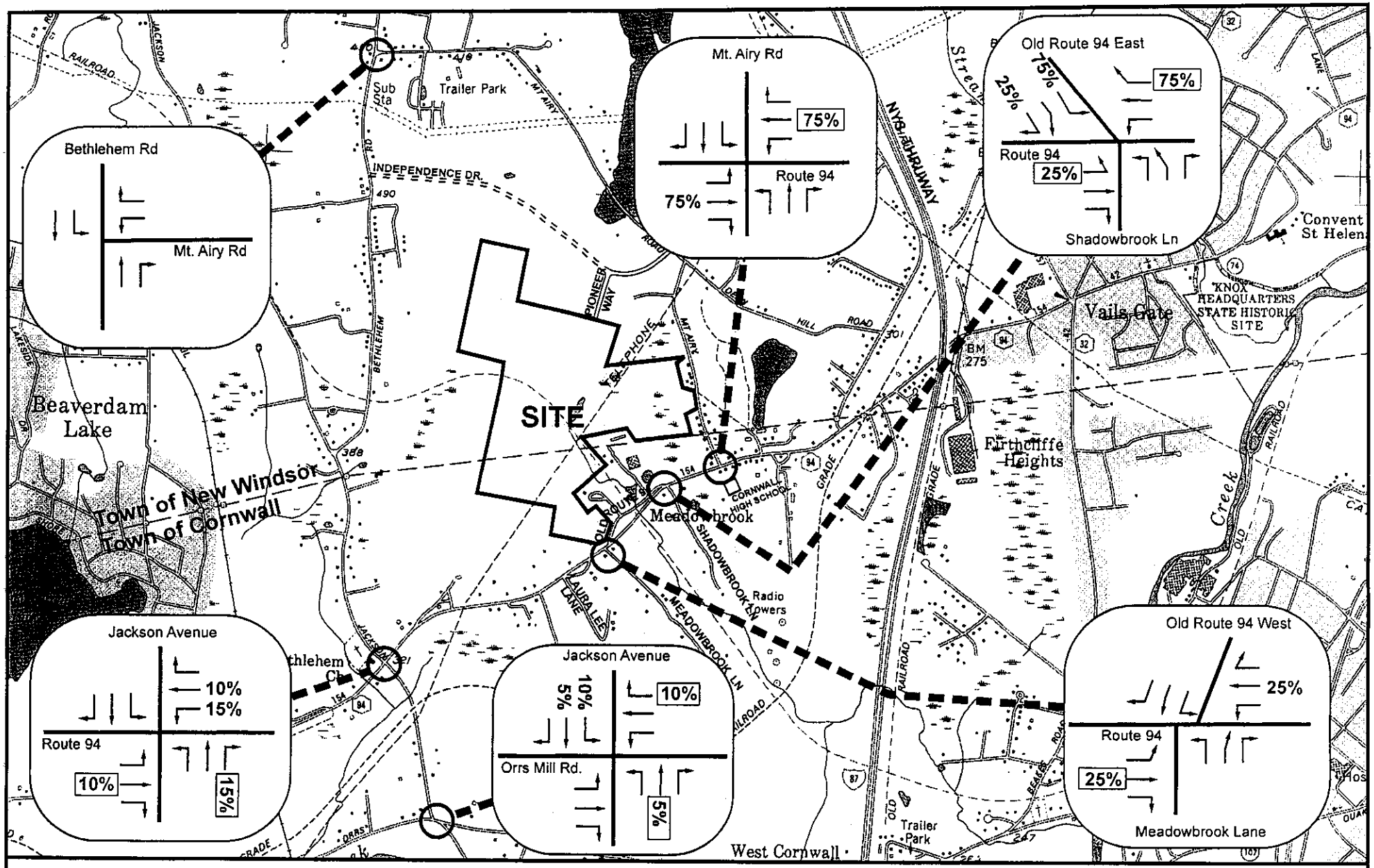


Figure 8: Sensitivity Site Distribution AM and PM Peak Hour Traffic

Meadowbrook Estates

Towns of New Windsor and Cornwall, Orange County, New York

Base Map: NYSDOT Cornwall Planimetric Quad Map, 1985

Scale: 1" = 2000'

File 0168 Fig 8 05/20/03

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

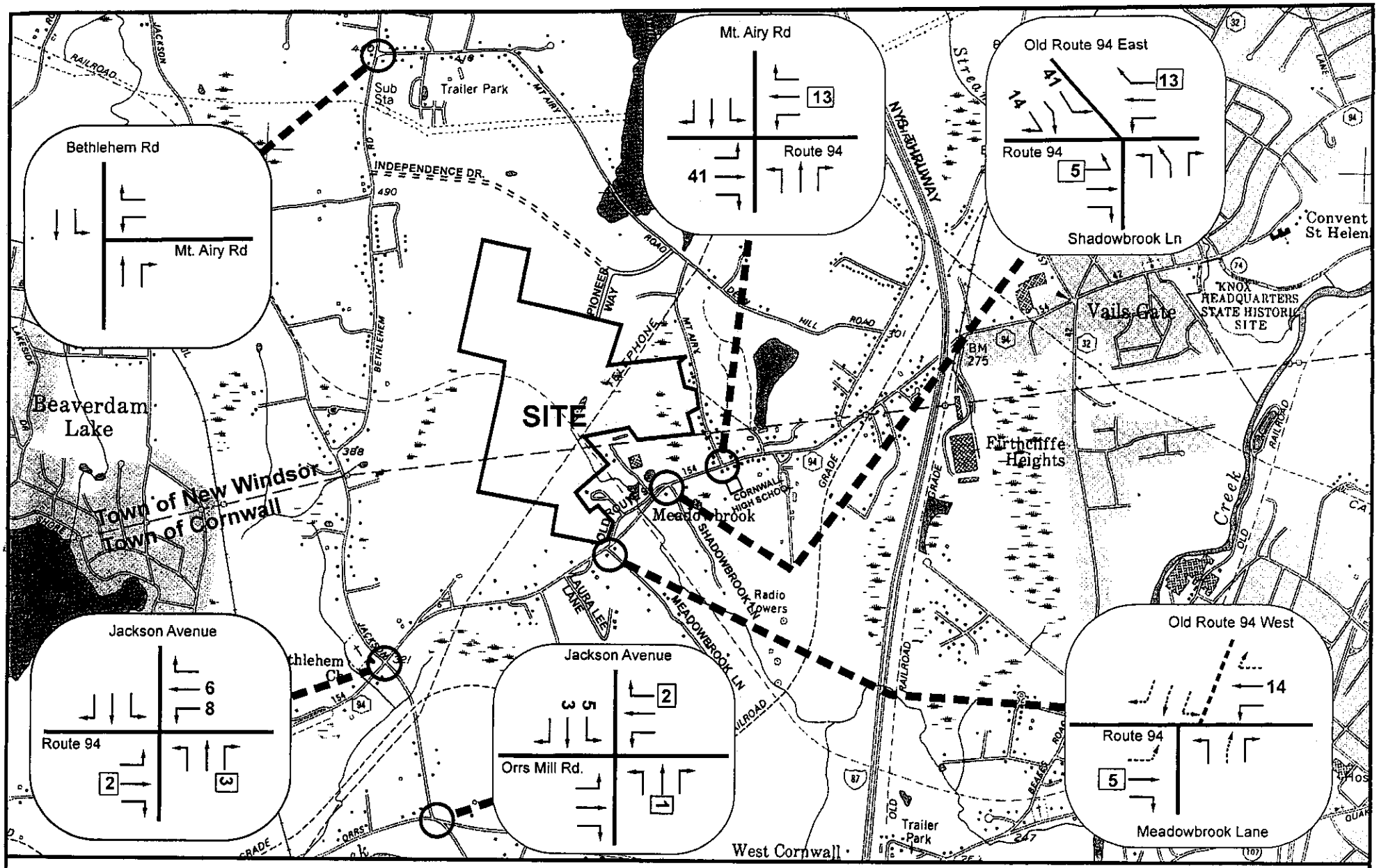


Figure 9: Sensitivity Site Generated AM Peak Hour Traffic

Meadowbrook Estates

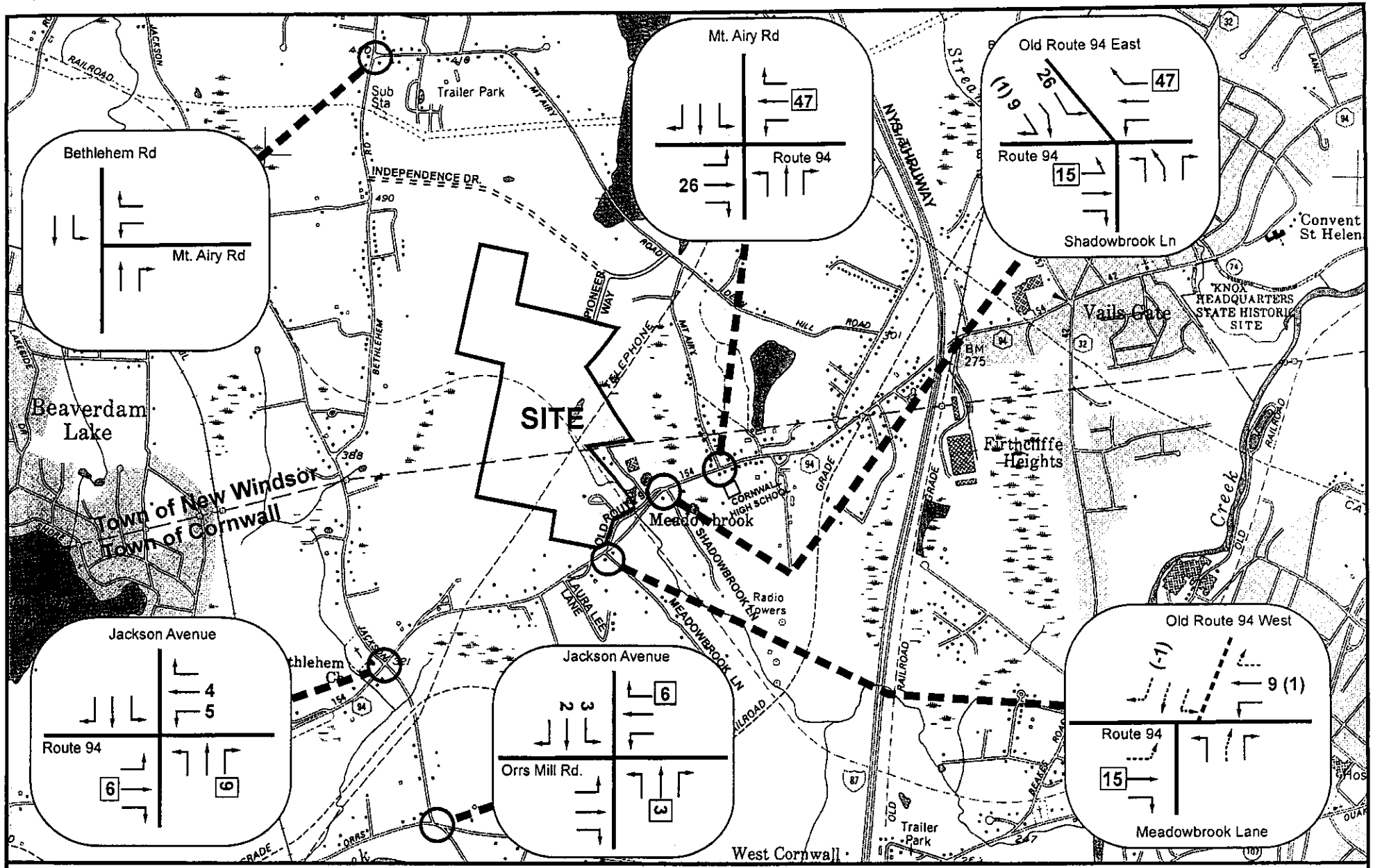
Towns of New Windsor and Cornwall, Orange County, New York

Base Map: NYSDOT Cornwall Planimetric Quad Map, 1985

Scale: 1" = 2000'

File 0168 Fig 9 05/20/03

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418



Intersections Studied
XX Inbound Traffic
XX Outbound Traffic
(1) Rerouted Trip from Road Closure
------ Movement To Be Eliminated

Figure 10: Sensitivity Site Generated PM Peak Hour Traffic

Meadowbrook Estates

Towns of New Windsor and Cornwall, Orange County, New York

Base Map: NYSDOT Cornwall Planimetric Quad Map, 1985

Scale: 1" = 2000'

File 0168 Fig 2 05/20/03

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

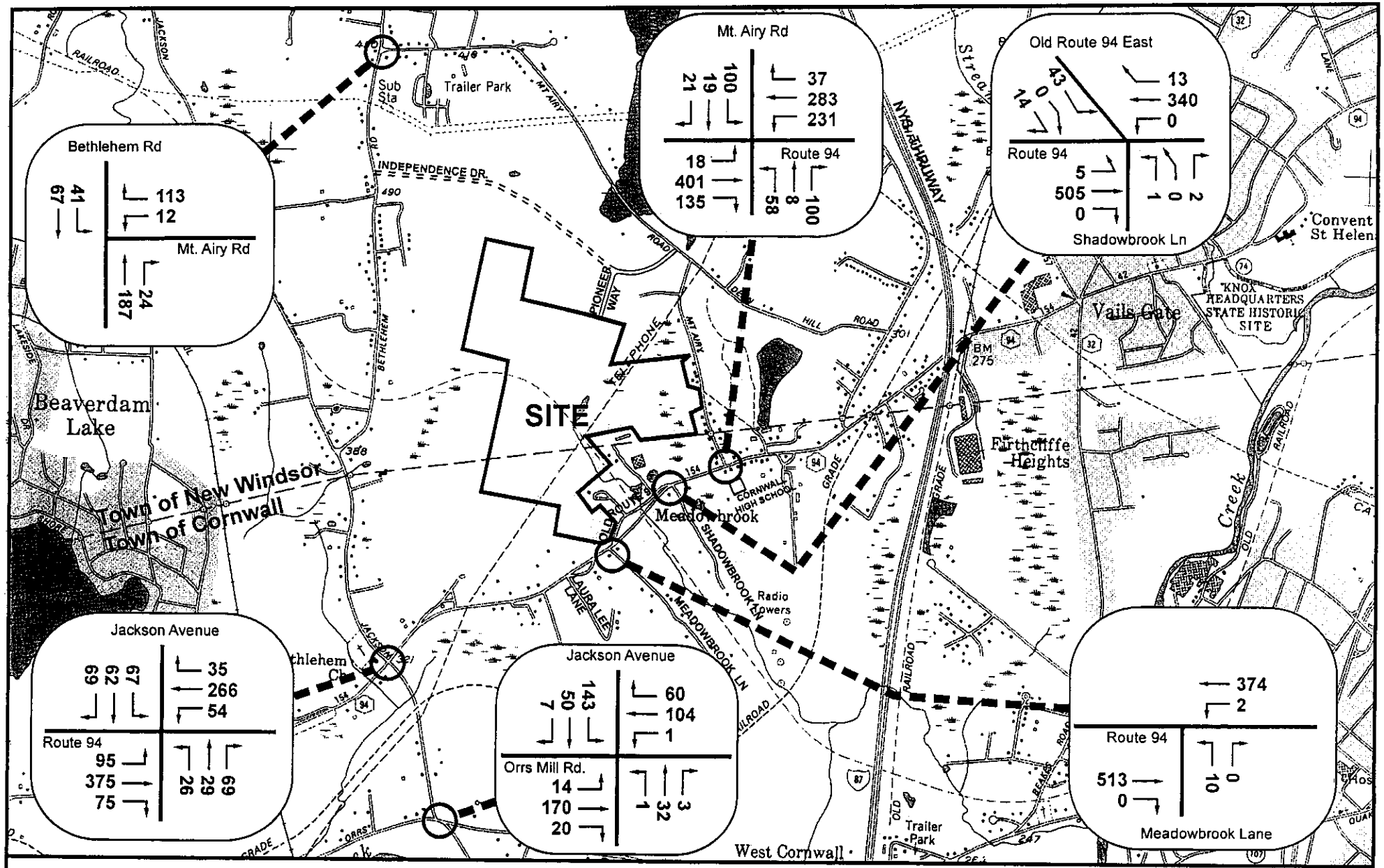


Figure 11: Sensitivity Build AM Peak Hour Traffic

Meadowbrook Estates

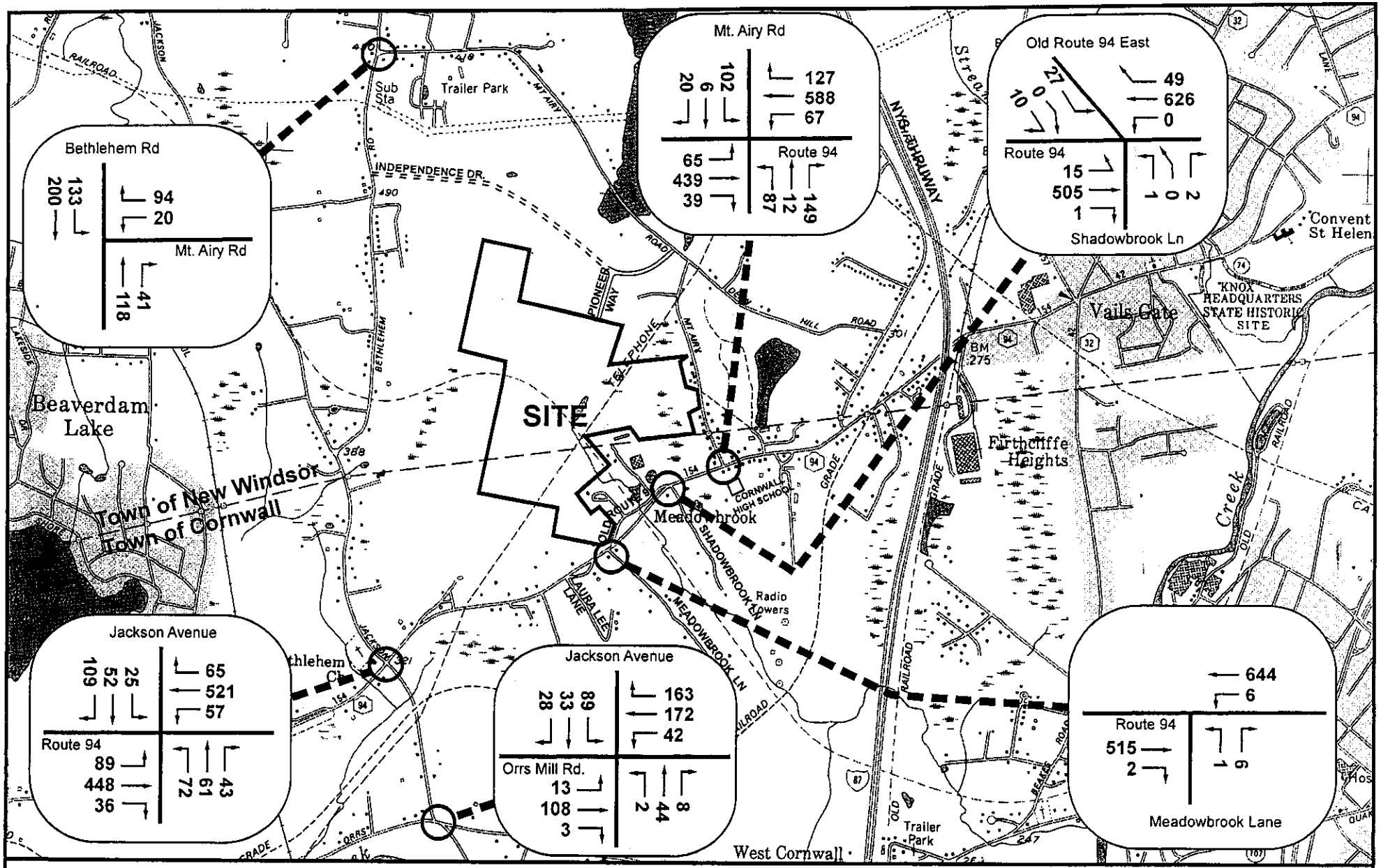
Towns of New Windsor and Cornwall, Orange County, New York

Base Map: NYSDOT Cornwall Planimetric Quad Map, 1985

Scale: 1" = 2000'

File 0168 Fig 11 05/20/03

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418



Intersections Studied

Figure 12: Sensitivity Build PM Peak Hour Traffic

Meadowbrook Estates

Towns of New Windsor and Cornwall, Orange County, New York

Base Map: NYSDOT Cornwall Planimetric Quad Map, 1985

Scale: 1" = 2000'

File 0168 Fig 12 05/20/03

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Attachment D

LEVEL OF SERVICE
CALCULATIONS

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Mt.Airy Road & Route 94
Agency or Co.	TMA	Area Type	All other areas
Date Performed	5/20/03	Jurisdiction	Town of Cornwall
Time Period	AM Peak Hour	Analysis Year	Build Sensitivity
		Project ID	Meadowbrook Estates

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume, V (vph)	18	401	135	231	283	37	58	8	100	100	19	21
% Heavy vehicles, %HV	9	9	9	20	15	15	20	20	20	24	24	24
Peak-hour factor, PHF	0.77	0.77	0.77	0.87	0.87	0.87	0.85	0.85	0.85	0.61	0.61	0.61
Pretimed (P) or actuated (A)	A	P	P	A	P	P	P	P	P	P	P	P
Start-up lost time, l_1	2.0	2.0		2.0	2.0			2.0			2.0	
Extension of effective green, e	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type, AT	3	3		3	3			3			3	
Unit extension, UE	3.0	3.0		3.0	3.0			3.0			3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000			1.000			1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	11.0		11.0	11.0			13.0			10.0	
Parking / Grade / Parking	N	2	N	N	-2	N	N	2	N	N	-6	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0			0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	06	07	08
Timing	G = 36.0	G = 6.0	G =	G =	G = 23.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 80.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	23	696		266	368			195			229	
Lane group capacity, c	554	722		307	713			358			269	
v/c ratio, X	0.04	0.96		0.87	0.52			0.54			0.85	
Total green ratio, g/C	0.59	0.45		0.59	0.45			0.29			0.29	
Uniform delay, d_1	9.9	21.4		29.1	15.8			24.1			26.9	
Progression factor, PF	1.000	1.000		1.000	1.000			1.000			1.000	
Delay calibration, k	0.11	0.50		0.40	0.50			0.50			0.50	
Incremental delay, d_2	0.0	25.8		22.0	2.7			5.8			27.2	
Initial queue delay, d_3												
Control delay	9.9	47.1		51.1	18.4			29.9			54.1	
Lane group LOS	A	D		D	B			C			D	
Approach delay	45.9			32.1			29.9			54.1		
Approach LOS	D			C			C			D		
Intersection delay	40.3						Intersection LOS			D		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JAG
Agency/Co.	TMA
Date Performed	5/20/03
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Rt 94 & Meadowbrook East
Jurisdiction	Town of Cornwall
Analysis Year	Build Sensitivity

Project Description: Meadowbrook Estates

East/West Street: Route 94 | North/South Street: Meadowbrook Road

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	505	0	0	340	13
Peak-Hour Factor, PHF	0.73	0.73	0.73	0.88	0.88	0.88
Hourly Flow Rate, HFR	6	691	0	0	386	14
Percent Heavy Vehicles	9	--	--	16	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	2	43	0	14
Peak-Hour Factor, PHF	0.38	0.38	0.38	0.90	0.90	0.90
Hourly Flow Rate, HFR	2	0	5	47	0	15
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		1			2	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	6	0		7			62	
C (m) (vph)	1122	842		318			227	
v/c	0.01	0.00		0.02			0.27	
95% queue length	0.02	0.00		0.07			1.07	
Control Delay	8.2	9.3		16.6			26.7	
LOS	A	A		C			D	
Approach Delay	--	--	16.6			26.7		
Approach LOS	--	--	C			D		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JAG
Agency/Co.	TMA
Date Performed	5/20/03
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Rt 94 & Meadowbrook West
Jurisdiction	Town of Cornwall
Analysis Year	Build Sensitivity

Project Description: Meadowbrook Estates

East/West Street: Route 94 | North/South Street: Meadowbrook Road

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	513	0	2	374	0
Peak-Hour Factor, PHF	0.72	0.72	0.72	0.89	0.89	0.89
Hourly Flow Rate, HFR	0	712	0	2	420	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	0	0	1	1	1
Peak-Hour Factor, PHF	0.63	0.63	0.63	0.25	0.25	0.25
Hourly Flow Rate, HFR	15	0	0	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		2		15				
C (m) (vph)		897		224				
v/c		0.00		0.07				
95% queue length		0.01		0.21				
Control Delay		9.0		22.2				
LOS		A		C				
Approach Delay	--	--	22.2					
Approach LOS	--	--	C					

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JAG
Agency/Co.	TMA
Date Performed	5/20/03
Analysis Time Period	AM Peak Hour

Site Information

Intersection	Orrs Mill /Jackson
Jurisdiction	Town of Cornwall
Analysis Year	Build Sensitivity

Project Description *Meadowbrook Estates*

East/West Street: *Orrs Mill Road* | North/South Street: *Jackson Avenue*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	14	170	20	1	104	60
Peak-Hour Factor, PHF	0.72	0.72	0.72	0.86	0.86	0.86
Hourly Flow Rate, HFR	19	236	27	1	120	69
Percent Heavy Vehicles	4	--	--	11	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	32	3	143	50	7
Peak-Hour Factor, PHF	0.71	0.71	0.71	0.78	0.78	0.78
Hourly Flow Rate, HFR	1	45	4	183	64	8
Percent Heavy Vehicles	5	5	5	4	4	4
Percent Grade (%)		10			-2	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	19	1		50			255	
C (m) (vph)	1373	1251		486			472	
v/c	0.01	0.00		0.10			0.54	
95% queue length	0.04	0.00		0.34			3.16	
Control Delay	7.7	7.9		13.3			21.2	
LOS	A	A		B			C	
Approach Delay	--	--	13.3			21.2		
Approach LOS	--	--	B			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Route 94 & Jackson Avenue
Agency or Co.	TMA	Area Type	All other areas
Date Performed	5/20/03	Jurisdiction	Town of Cornwall
Time Period	AM Peak Hour	Analysis Year	Build Signal Sensitivity
		Project ID	Meadowbrook Estates

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Volume, V (vph)	95	375	75	54	266	35	26	29	64	67	62	69
% Heavy vehicles, %HV	0	0	0	0	0	0	0	0	0	0	0	0
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.74	0.74	0.74	0.89	0.89	0.89
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, l_1		2.0			2.0			2.0			2.0	
Extension of effective green, e		2.0			2.0			2.0			2.0	
Arrival type, AT		3			3			3			3	
Unit extension, UE		3.0			3.0			3.0			3.0	
Filtering/metering, I		1.000			1.000			1.000			1.000	
Initial unmet demand, Q_b		0.0			0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width		12.0			12.0			12.0			12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	-2	N	N	2	N
Parking maneuvers; N_m												
Buses stopping, N_B		0			0			0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 30.0	G =	G =	G =	G = 20.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		586			382			160			223	
Lane group capacity, c		812			812			535			506	
v/c ratio, X		0.72			0.47			0.30			0.44	
Total green ratio, g/C		0.50			0.50			0.33			0.33	
Uniform delay, d_1		11.7			9.8			14.8			15.6	
Progression factor, PF		1.000			1.000			1.000			1.000	
Delay calibration, k		0.50			0.50			0.50			0.50	
Incremental delay, d_2		5.5			2.0			1.4			2.8	
Initial queue delay, d_3												
Control delay		17.2			11.8			16.2			18.4	
Lane group LOS		B			B			B			B	
Approach delay	17.2			11.8			16.2			18.4		
Approach LOS	B			B			B			B		
Intersection delay	15.8						Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Mt.Airy Road & Route 94
Agency or Co.	TMA	Area Type	All other areas
Date Performed	5/20/03	Jurisdiction	Town of Cornwall
Time Period	PM Peak Hour	Analysis Year	Build Sensitivity
		Project ID	Meadowbrook Estates

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume, V (vph)	65	439	39	67	588	127	87	12	149	102	6	20
% Heavy vehicles, %HV	6	6	6	10	3	3	20	10	20	6	6	6
Peak-hour factor, PHF	0.86	0.86	0.86	0.92	0.92	0.92	0.85	0.85	0.85	0.53	0.53	0.53
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, l_1	2.0	2.0		2.0	2.0			2.0			2.0	
Extension of effective green, e	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type, AT	3	3		3	3			3			3	
Unit extension, UE	3.0	3.0		3.0	3.0			3.0			3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000			1.000			1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	11.0		11.0	11.0			13.0			10.0	
Parking / Grade / Parking	N	2	N	N	-2	N	N	2	N	N	-6	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0			0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 30.0	G =	G =	G =	G = 20.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	76	555		73	777			291			241	
Lane group capacity, c	130	848		278	877			410			326	
v/c ratio, X	0.58	0.65		0.26	0.89			0.71			0.74	
Total green ratio, g/C	0.50	0.50		0.50	0.50			0.33			0.33	
Uniform delay, d_1	10.6	11.1		8.6	13.5			17.5			17.7	
Progression factor, PF	1.000	1.000		1.000	1.000			1.000			1.000	
Delay calibration, k	0.50	0.50		0.50	0.50			0.50			0.50	
Incremental delay, d_2	17.8	3.9		2.3	12.8			10.0			14.0	
Initial queue delay, d_3												
Control delay	28.4	15.1		10.9	26.2			27.4			31.7	
Lane group LOS	C	B		B	C			C			C	
Approach delay	16.7			24.9			27.4			31.7		
Approach LOS	B			C			C			C		
Intersection delay	23.5						Intersection LOS			C		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JAG
Agency/Co.	TMA
Date Performed	5/20/03
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Rt 94 & Meadowbrook East
Jurisdiction	Town of Cornwall
Analysis Year	Build Sensitivity

Project Description: Meadowbrook Estates

East/West Street: Route 94 | North/South Street: Meadowbrook Road

Intersection Orientation: East-West | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	15	505	1	0	626	49
Peak-Hour Factor, PHF	0.81	0.81	0.81	0.84	0.84	0.84
Hourly Flow Rate, HFR	18	623	1	0	745	58
Percent Heavy Vehicles	3	--	--	3	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	2	27	0	10
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.90	0.90	0.90
Hourly Flow Rate, HFR	1	0	2	30	0	11
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		1			2	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	18	0		3			41	
C (m) (vph)	816	952		222			137	
v/c	0.02	0.00		0.01			0.30	
95% queue length	0.07	0.00		0.04			1.17	
Control Delay	9.5	8.8		21.4			42.1	
LOS	A	A		C			E	
Approach Delay	--	--	21.4			42.1		
Approach LOS	--	--	C			E		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JAG
Agency/Co.	TMA
Date Performed	5/20/03
Analysis Time Period	PM Peak Condition

Site Information

Intersection	Rt 94 & Meadowbrook West
Jurisdiction	Town of Cornwall
Analysis Year	Build Sensitivity

Project Description *Meadowbrook Estates*

East/West Street: *Route 94* | North/South Street: *Meadowbrook Road*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	515	2	6	644	0
Peak-Hour Factor, PHF	0.81	0.81	0.81	0.87	0.87	0.87
Hourly Flow Rate, HFR	0	635	2	6	740	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	6	0	0	1
Peak-Hour Factor, PHF	0.58	0.58	0.58	0.25	0.25	0.25
Hourly Flow Rate, HFR	1	0	10	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		6		11				
C (m) (vph)		956		406				
v/c		0.01		0.03				
95% queue length		0.02		0.08				
Control Delay		8.8		14.1				
LOS		A		B				
Approach Delay	--	--	14.1					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JAG
Agency/Co.	TMA
Date Performed	5/20/02
Analysis Time Period	PM Peak Hour

Site Information

Intersection	Orrs Mill /Jackson
Jurisdiction	Town of Cornwall
Analysis Year	Build Sensitivity

Project Description *Meadowbrook Estates*

East/West Street: *Orrs Mill Road* | North/South Street: *Jackson Avenue*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	13	108	3	2	172	163
Peak-Hour Factor, PHF	0.72	0.72	0.72	0.77	0.77	0.77
Hourly Flow Rate, HFR	18	149	4	2	223	211
Percent Heavy Vehicles	1	--	--	1	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	2	44	8	89	33	28
Peak-Hour Factor, PHF	0.81	0.81	0.81	0.83	0.83	0.83
Hourly Flow Rate, HFR	2	54	9	107	39	33
Percent Heavy Vehicles	0	0	0	5	5	5
Percent Grade (%)		10			-2	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	18	2		65			179	
C (m) (vph)	1131	1434		427			435	
v/c	0.02	0.00		0.15			0.41	
95% queue length	0.05	0.00		0.53			1.98	
Control Delay	8.2	7.5		14.9			18.9	
LOS	A	A		B			C	
Approach Delay	--	--	14.9			18.9		
Approach LOS	--	--	B			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Route 94 & Jackson Avenue
Agency or Co.	TMA	Area Type	All other areas
Date Performed	5/20/03	Jurisdiction	Town of Cornwall
Time Period	PM Peak Hour	Analysis Year	Build Signal Sensitivity
		Project ID	Meadowbrook Estates

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Volume, V (vph)	89	448	36	57	521	65	72	61	43	25	52	109
% Heavy vehicles, %HV	0	0	0	0	0	0	0	0	0	0	0	0
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	0.84	0.84	0.84	0.92	0.92	0.92
Pretimed (P) or actuated (A)	P	P	P	P	P	P	P	P	P	P	P	P
Start-up lost time, l_1		2.0			2.0			2.0			2.0	
Extension of effective green, e		2.0			2.0			2.0			2.0	
Arrival type, AT		3			3			3			3	
Unit extension, UE		3.0			3.0			3.0			3.0	
Filtering/metering, I		1.000			1.000			1.000			1.000	
Initial unmet demand, Q_b		0.0			0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width		12.0			12.0			12.0			12.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	-2	N	N	2	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0			0			0	
Min. time for pedestrians, G_p		3.2			3.2			3.2			3.2	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 35.0	G =	G =	G =	G = 15.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		658			748			210			202	
Lane group capacity, c		901			988			355			407	
v/c ratio, X		0.73			0.76			0.59			0.50	
Total green ratio, g/C		0.58			0.58			0.25			0.25	
Uniform delay, d_1		9.1			9.3			19.8			19.3	
Progression factor, PF		1.000			1.000			1.000			1.000	
Delay calibration, k		0.50			0.50			0.50			0.50	
Incremental delay, d_2		5.2			5.4			7.1			4.3	
Initial queue delay, d_3												
Control delay		14.3			14.7			26.9			23.5	
Lane group LOS		B			B			C			C	
Approach delay	14.3			14.7			26.9			23.5		
Approach LOS	B			B			C			C		
Intersection delay	16.9						Intersection LOS			B		

Attachment E

REVISED FIGURE 10

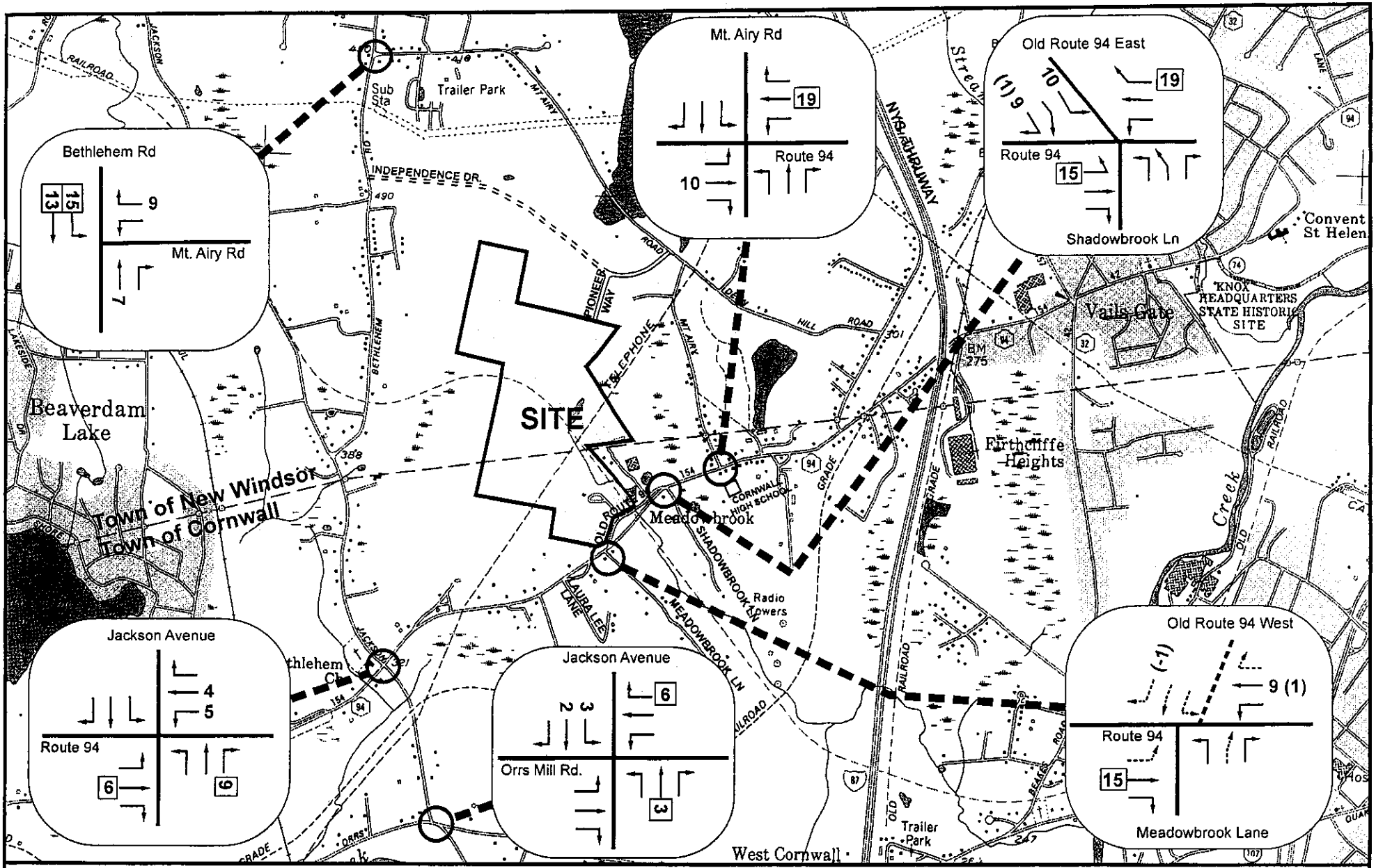


Figure 10: Site Generated PM Peak Hour Traffic

Meadowbrook Estates

Towns of New Windsor and Cornwall, Orange County, New York

Base Map: NYSDOT Cornwall Planimetric Quad Map, 1985

Scale: 1" = 2000'

File 0168 Fig 2 05/20/03

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